

INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference J1494HO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US 03/08428	International filing date (day/month/year) 20.03.2003	Priority date (day/month/year) 09.04.2002
International Patent Classification (IPC) or both national classification and IPC E03C1/046		
Applicant JOHNSON DIVERSEY, INC.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 15.10.2003	Date of completion of this report 02.08.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer De Coene, P Telephone No. +31 70 340-2730 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/US 03/08428

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-5 as originally filed
6 received on 18.06.2004 with letter of 18.06.2004

Claims, Numbers

1-4 as originally filed
5, 6 received on 18.06.2004 with letter of 18.06.2004

Drawings, Sheets

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/US 03/08428**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-6
	No: Claims	
Inventive step (IS)	Yes: Claims	1-6
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-6
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

The document US-A-5 522 419 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document):

an eductor 20 comprising a venturi structure 36 and an air gap 58 across which in air gap operational mode a liquid jet is passed to the venturi structure 36.

The subject-matter of claim 1 differs from this known eductor in that the eductor further comprises a removable non-return valve located in the air gap, whereby the eductor is convertible between air gap operational mode and non-return valve operational mode.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as providing an eductor having alternative backflow prevention when the operating environment interferes with the air gap and being able to readily change back to air gap operational mode.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons: There is no suggestion in the prior art to provide the eductor with a removable non-return valve in order to be able to shift between two operational modes. Although it is known to combine an eductors and a non-return valve in installations, in particular arranged in series, additional pipework would be required to be able to shift between two operational modes.

Correspondingly, the subject-matter of method claim 5 is new and involves an inventive step.

Claims 2-4 and 6 are dependent on claims 1 and 5 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Herein described is

~~In a second aspect of the present invention there is provided a~~

non-return valve cartridge adapted to be removably installed in an air gap of an eductor having an air gap and a venturi inlet zone, wherein the non-return valve cartridge comprises an inlet adapted to receive water from a supply line and an outlet adapted to deliver water to the venturi inlet zone, and a non-return valve between the inlet and the outlet.

Preferably, the outlet comprises a sealing surface to provide sealing contact with the venturi inlet zone.

Preferably the inlet comprises a sealing surface to provide sealing contact with the supply line.

Preferably, the non-return valve cartridge has a core, an expandable resilient sleeve arranged around and in sealing contact with the core to prevent fluid flow between the sleeve and the core, the sealing contact being broken when the resilient sleeve is expanded, wherein the resilient sleeve is expanded by fluid pressure from the inlet.

Preferably the non-return valve cartridge comprises an outer casing arranged around the resilient sleeve to limit the extent of expansion of the sleeve and seal to the sleeve during flow from the inlet to the outlet. In this arrangement a back flow of water may pass between the outer casing and the sleeve when the path from the inlet to the outlet is closed. Preferably the outer casing comprises an aperture through which fluid may exit the non-return valve if back flow occurs.

A non-return valve cartridge ~~According to the present invention~~

5. ~~8.~~ A method of adapting an air gap eductor having a venturi mixing portion (3) and an air gap (5), comprising installing a non-return valve (19) in said air gap.
6. ~~10.~~ A method according to claim ⁵~~9~~, wherein the air gap eductor comprises a nozzle for directing a water jet and the method comprises the step of removing the nozzle from the eductor.